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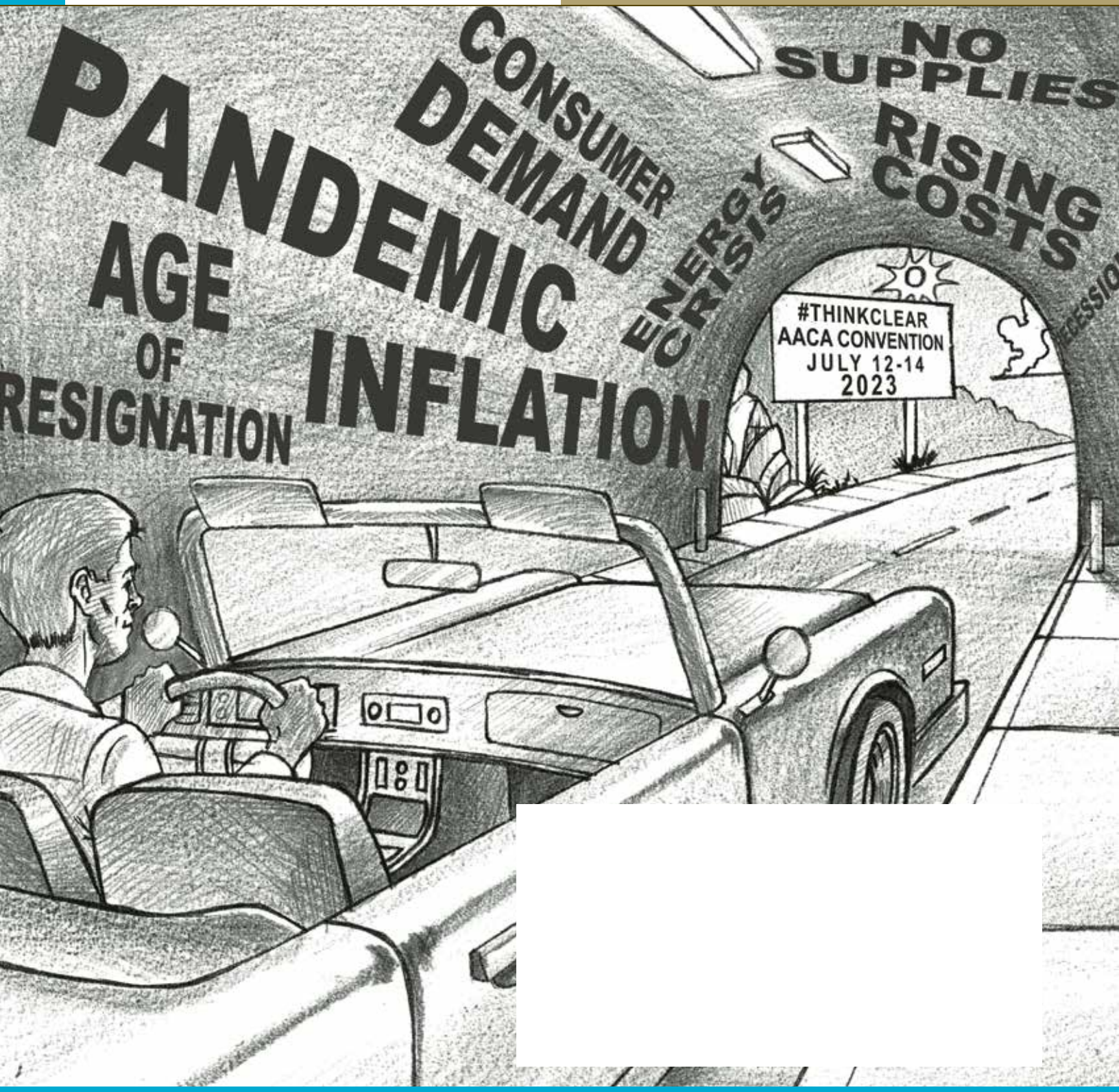
the Journal

American Academy of Clear Aligners

The Academy for Clear Aligner Therapy



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Dr. Jeffrey Galler
Editor

Editorial

If only...

We love getting article submissions from readers, but sometimes, it becomes quite clear that the author's clinical expertise far surpasses his command of the English language.

We recently received a wonderful case study from a dentist whose English was not the strongest.

Apparently, he had been corresponding, via email, with a prospective patient. He wrote, "I write to patient I can fix his teeth with Invisalign. Please to add only."

Copyeditor Marc Glasser and I were trying to discern what the author actually meant to say. Note that the choice of where in the sentence to insert the word "only" can completely change the meaning of the sentence.

Which of these did he mean?

- "Only I wrote to this patient that I can fix his teeth with Invisalign."
- "I only wrote to this patient that I can fix his teeth with Invisalign."
- "I wrote to only this patient that I can fix his teeth with Invisalign."
- "I wrote to this patient that only I can fix his teeth with Invisalign."
- "I wrote to this patient that I can only fix his teeth with Invisalign."
- "I wrote to this patient that I can fix his teeth only with Invisalign."

After a few email exchanges, we were able to clarify that the author meant, "The patient had consulted with several orthodontists, but I was the only one who assured him that I could correct his malocclusion with Invisalign instead of traditional orthodontic wires and brackets."

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Case Reports

Case Study of an Excessively Shy Teen: Something to Cheer About

by Andrea Dernisky, DMD

This case was a Golden Aligner Competition winner at the 2022 Gallerite Reunion in Las Vegas.

Dr. Andrea K. Dernisky completed her DMD at the University of British Columbia in 2008. She is a Diamond Invisalign provider who has established two thriving practices in British Columbia—one of which is among the few Invisalign-only practices in all of Canada. She represents a growing trend of young cosmetic dentists who use Invisalign in conjunction with composite and/or porcelain restorations, as well as for setting up full-mouth rehabilitation cases. She also takes pride in helping growing children reach their full potential through setting a strong dental foundation with healthy breathing and tongue-posturing. Andrea's true passion is people and doing whatever she can to make their lives a little brighter.

In addition to Invisalign Clear Essentials I/II, Reingage, and Clear Aligner Teen Residency training, Dr. Dernisky has received certification in Botox Cosmetic and HealthyStart. She currently sits on the Board of Directors of the American Academy of Clear Aligners as a Key Opinion Leader.

Outside of the dental world, Dr. Dernisky can be found on the court with her two sons, Arshan and Aran, or watching her daughter, Arya, perform at acro. She is an avid fitness enthusiast who loves travelling abroad.

Introduction

It never ceases to amaze me what a little bit of plastic and good planning can achieve.

I have been fortunate to treat more than 1500 Invisalign cases over the course of my career. I have witnessed firsthand how the body language and confidence changed in these patients.

Figure 1: what Aoi valued most in her world was alignment and harmony.

Many were profusely appreciative in both words and actions and became some of the greatest sources of referrals to my practices. These were all-around feel-good, overtly exhilarating experiences for both the patient and my team.

This specific case, by all accounts, was very different. The patient and I barely exchanged two words together throughout the entire experience—consult to retainer delivery—and yet this case, and the experience, will go down as one of my favourites.

Aoi initially presented to our practice as a healthy 14-year-old young lady, who was extremely shy and reserved around anyone she did not know well. This was in stark contrast to the persona her mother detailed she expressed on the Cheerleading World scene. Here she was in her element and was an ultra-competitive, world-class athlete and champion at that. She lived and breathed all things "Cheer." In fact, her parents had emigrated to Canada from Japan just for her to be able to develop her cheerleading skills to the level at which she now competes.

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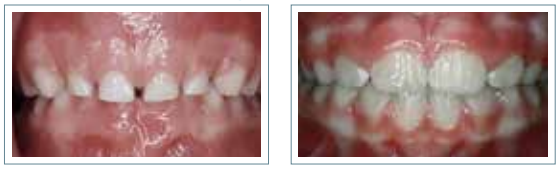

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Figure 2: an unhappy smile, devoid of alignment and harmony.

Figure 3: the patient was so unhappy with her smile that she usually did not smile for the camera, and often hid her smile with emojis and other distractions.

What Aoi valued most in her world was alignment and harmony. Every picture her mom showed me was of her perfectly poised in various gymnast poses (**Figure 1**).

However, the one part of Aoi that defied this trend toward alignment, harmony, and perfection was her smile (**Figure 2**). A quick perusal of Aoi's Instagram account reveals her perfectly hiding her mouth from sight in every photo. Whether it was a glass covering her or a camera strategically placed, she even went so far as to place emojis and various other distractions around her mouth to conceal this inner pain she endured (**Figure 3**).

As a mom, I know what pressures youth are subjected to routinely, and this tugged at my heartstrings even more than usual. All Aoi wanted was to be aligned and to don a smile that matched her cheerleading prowess.

Now, Aoi competed internationally frequently, so she needed a product that would allow for a virtual option for follow-ups and check-ins, which braces simply could not offer. Dealing with brackets debonding or wires going rogue just was not an option on the road. Her mom had sought us out knowing we specialized in Invisalign treatment and had a robust virtual program in place.

Diagnostic findings

Planning the execution of this case was one of the most challenging yet exhilarating things I have ever done in my

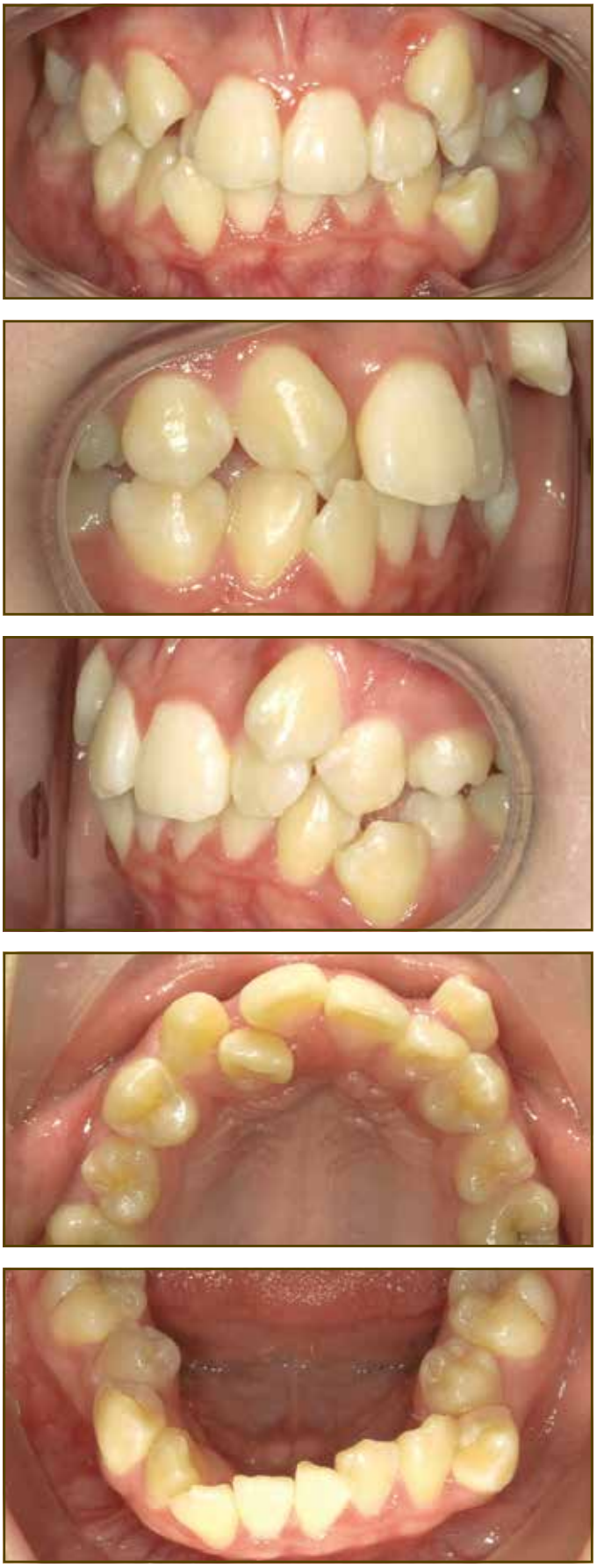

Figure 4: pre-treatment.

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career. Observing the minimally attached, inflamed gingiva with concomitant thin tissue biotype, and an absolute overload of tooth mass for Aoi's small jaws, it was clear that expansion, although she was young and malleable, was not an option. Teeth were going to have to go, and it was a real struggle trying to decide which teeth to choose, given Invisalign and not brackets was the modality of choice by the patient. In addition to this tooth mass overload in a highly constricted space, Aoi had the following clinical presentation (**Figure 4**):

- Class I molar (canines indeterminate based on position)
- Overbite of 25%-50%, depending on reference
- Overjet of 3.5 mm
- Crossbite for tooth #21
- 44° rotation on her upper right lateral (tooth #7), which was in crossbite
- 50° rotation on her upper right second premolar (tooth #4), which was in buccal crossbite
- Convex profile with nearly incompetent lips
- Proclined maxillary incisors
- Bolton discrepancy (maxillary excess, more pronounced in the posterior segments)
- Maxillary midline positioned slightly (1.5 mm) to the left of the facial midline
- Irregular occlusal topography for both upper and lower arches

Nothing about this case was going to come easily or without tremendous effort and commitment on Aoi's part. I had prepared her to need multiple Refinements, interarch elastics, and possibly years of treatment. Although the mere thought of extracting an arch-defining tooth (the upper canine) was paralyzing to me, I knew it was the more predictable choice. I opted for balance within the arch and thus did not remove the rogue lateral (tooth #7), which would have allowed faster and easier alignment. Had I done so, I would have faced an esthetic challenge of making the lateralized canine match the mirror-imaged lateral at the end of treatment.

Aoi had no outstanding restorative work to be completed by her family dentist (although I encouraged her to have her occlusal grooves further evaluated upon completion of her orthodontics), nor did she express any desire for further cosmetic pursuits such as whitening or chip repair once the orthodontic work was completed. She denied any issues with jaw joint and muscles of mastication and showed age-appropriate bone levels on the radiographs we obtained. Although she presented with quite generalized minimally attached gingiva (MAG) in both her upper and lower arches, it seemed that her hygiene was reasonable, but was insufficient in keeping her gingiva from being inflamed amidst her severely crowded dentition.

Treatment objectives

As alluded to previously, Aoi's chief concern, and our collective goal, was to reestablish alignment and balance in her dentition.

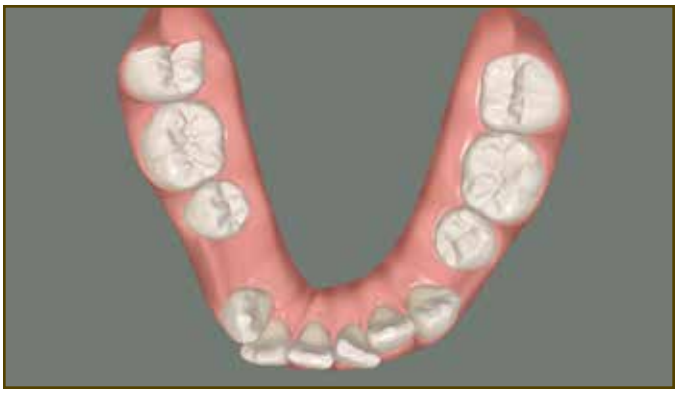

Figure 5: mandibular occlusal perspective illustrating the much larger residual spaces present (bilaterally) once teeth #21 and #28 were extracted prior to Invisalign treatment commencing.

Figure 6: maxillary occlusal perspective highlighting the relatively small residual space present once teeth #6 and #11 had been extracted prior to Invisalign treatment commencing. Note teeth #10 and #12 already contact interproximally.

We set out to create this healthy, confident smile through accomplishing the following clinical objectives:

- Extracting teeth #6, #11, #21, and #28 to allow for ideal tooth alignment with sufficient periodontal support
- Levelling the occlusal plane
- Establishing more balanced occlusion with better distribution of load and forces across her entire dentition
- Correcting the buccal crossbite for tooth #4
- Correcting the crossbite for tooth #21
- Resolving the moderately rotated and malposed teeth #4 and #21
- Reducing the maxillary central incisor proclination without compromising her upper lip support
- Improving lip competence
- Developing an even, symmetrical smile line

Treatment

Prior to commencing treatment, I discussed alternatives to Invisalign treatment, including referring Aoi to an orthodontist for traditional brackets to be placed. Based on her life requirements (routine international travel), she opted to proceed with the comprehensive Invisalign Teen product. She accepted there were aspects of the treatment that could be

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more challenging to complete and could fall short of ideal, as a reasonable trade-off for being able to use a more cosmetic, virtual-friendly modality. I warned her that it would be difficult to close the larger spaces that would exist following the extraction of her lower premolars without getting some degree of tipping of the posterior teeth while trying to translate and retract the mandibular anterior dentition. Based on the amount of crowding, I also warned her that black triangles might result in areas where the gingiva had been compressed and difficult to keep clean over the years. Aoi and her mother were informed and committed to proceed.

To Aoi's credit, she was an exemplary patient with impeccable tray wear throughout her treatment. We extracted teeth #6, #11, #21, and #28 prior to beginning Invisalign treatment (**Figures 5-6**). Although the treatment was extended based on her having to stay abroad longer than expected, there was only one set of Refinement trays needed to complete her treatment.

Her first round of trays required 39 trays. We sought to achieve all the alignment, retraction, and levelling listed in our treatment objectives with a combination of retention and optimized attachments to facilitate the requisite movements (**Figures 7-9**). The one set of Refinement trays we used to complete the case had 21 trays and used adjunctive modalities (buttons with interarch elastics) along with minimal Interproximal Reduction to help compensate for the tooth mass discrepancy that existed between the top and bottom arches.

In the end, Aoi and her mom declined having a fixed lingual wire placed for retention purposes, but we gave her upper and lower Vivera retainers at the end to hold her teeth in the final position.

Clinical outcome

Overall, my expectations were surpassed in terms of what we were able to achieve with Aoi's Invisalign journey (**Figure 10**). Despite having had 4 teeth extracted on the day of delivering her first trays, once healed, she had residual discernable divot in her bone and gingiva only where tooth #21 had been removed. No black triangles or deficiencies were obvious, and the overall gingival topography was quite harmonious despite her previously having had several teeth well outside of occlusion and the arch form.

Aoi did have several areas with small residual spacing interproximally (most notably between teeth #29 and #27, and between teeth #22 and #20), but nearly all the rotation, intrusion, and various translatory movements were achieved without incident (**Figure 11**).

However, as predicted, her lower right posterior teeth tipped slightly mesial during the translation and retraction of the lower anteriors, resulting in a unilateral posterior open bite. We used buttons with interarch elastics to help close the bite into ideal intercuspation and to upright teeth #29 and #30.

After treatment, Aoi's maxillary midline lined up more coincidentally with the facial midline, and her lips came together with more ease at rest. Her profile and lip posture were retained, and her arch shape and development were ideal, with an appropriate amount of buccal corridor fill and a much more even smile arc.

Figure 7: anterior view of Aoi's dentition at the start of her first round (left) and at her Refinement (right).

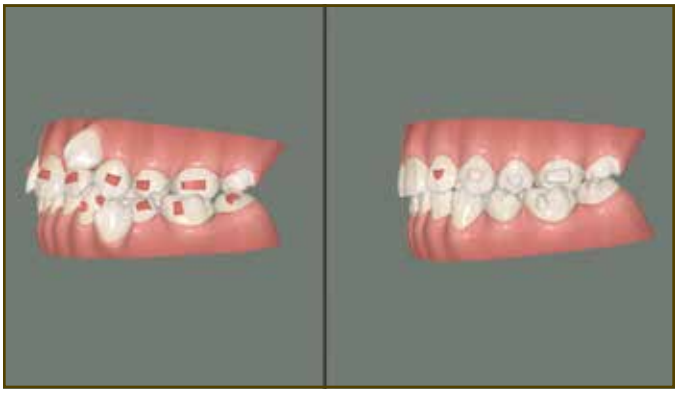

Figure 8: left side occlusion present at the beginning of the first round of treatment (left) and at Refinement (right), with attachments used for each.

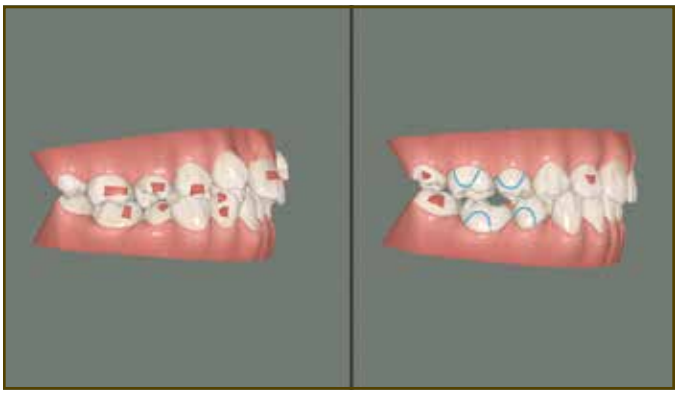

Figure 9: right side occlusion present at the beginning of the first round of treatment (left) and at Refinement (right), with attachments used for each and illustrating the unilateral posterior open bite from mesial tipping of the lower right posterior crowns during retraction of the anterior segment following the extraction of tooth #28.

Discussion

In restoring this severely crowded smile, there were a few important variables to consider that are worthy of discussion and contributed to both the successes and shortcomings of this treatment. First and foremost, we must appreciate Aoi's age

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Figure 10: no longer afraid to smile.

and malleability. Had Aoi been an adult with more dense bone and years of gingival inflammation and ultimate bone loss, we would not have been able to avoid rampant black triangles, gingival topography issues, and other bony irregularities. We were able to tap into the inflammatory potential of her extractions in four separate areas, which led to the release of bony turnover cell mediators that would certainly facilitate tooth movement in this young lady.

Although her age and bony malleability were in our favour, whenever extractions of posterior teeth are needed to achieve the intended clinical outcome, it is still easier to achieve more complicated translation movements (and avoid unintended crown tipping) when using traditional brackets and archwire. Because Aoi's life variables and desire for a cosmetic option prevailed, we had to make decisions regarding which teeth to extract based on the use of clear aligners (with or without adjunctive aids).

Regardless of position of the tooth or age of the patient, I do not think any practitioner takes lightly to the thought of removing an adult canine. The canine eminence supports the overlying lips and surrounding facial soft tissues and defines the arch. Its shape is unique, and canine occlusion and guidance are of utmost importance for the stability and protection of the teeth and bite. Had Aoi gone the traditional route, I would have recommended keeping the upper canines, repositioning as necessary, and opted to remove all first premolars. Instead, to play to the predictability and ease of the plastic trays to achieve alignment and a more evenly balanced occlusion and smile line, I chose to remove the upper canines and lower first premolars. We did not have the luxury of multiple midcourse corrections with her being out of town routinely for cheerleading. With her tooth #11 well out of position and the prospect of having to translate and retract four big, long-rooted canines, I was terrified we would have so many unintended crown tips and occlusal errors that we would never escape a poor clinical outcome (or at least several rounds of Refinements to achieve even a modicum of success).

It is worth noting that in all instances, it is preferable for the clinician to increase or expand an arch form to accommodate malposed teeth. It favours a healthy amount of space for the

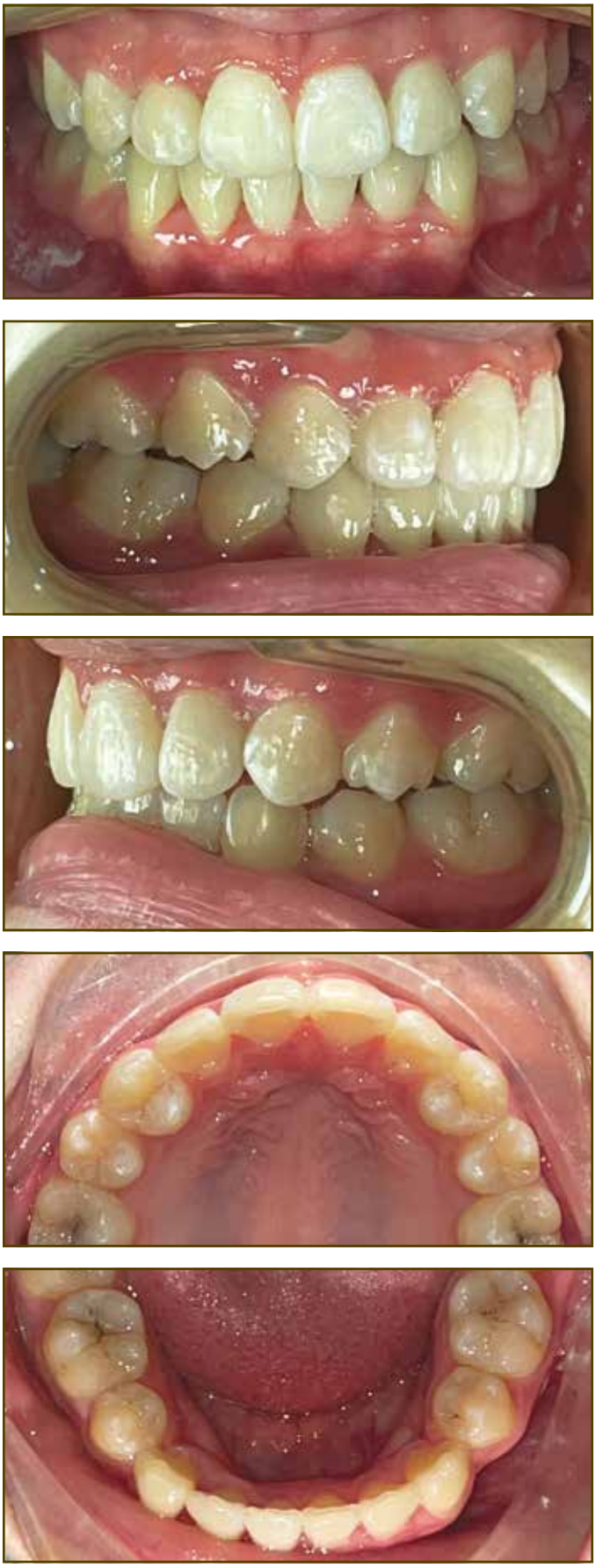

Figure 11: after treatment.

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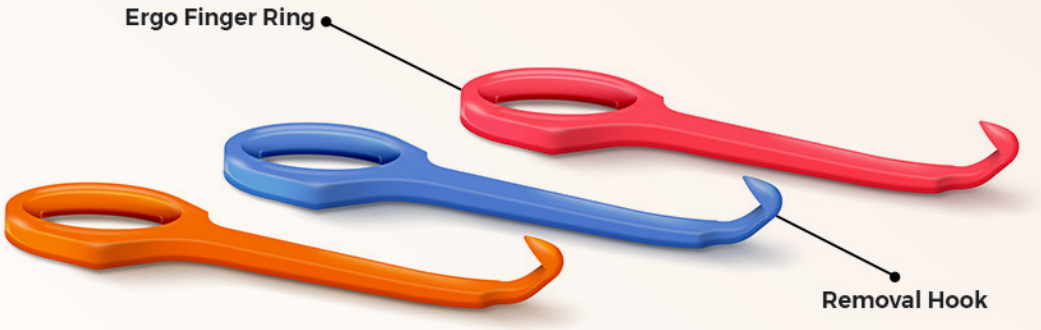

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tongue to position ideally and makes for a broad, beautiful smile. Unfortunately, in Aoi's case it was not possible, given her insufficient tissue biotype and bony support, to allow for this expansion, even if copious IPR were to be employed. Her soft tissues (lips and facial) would not have received that added arch length, as her maxillary central incisors were already heavily proclined and her lips were struggling to come together at rest. Thus, extractions were the only feasible choice to respect and preserve the already compromised periodontal support (i.e., MAG) of her teeth. With how far out of the arch form teeth #11 and #21 were at the start of treatment, it made a hard decision slightly easier, to select these teeth and their respective counterparts on the opposite side as the teeth to remove.

I firmly believe it goes a long way in ensuring patient satisfaction and trust when problems are anticipated by the clinician and not left to be experienced in the form of a bad surprise. We came into this treatment prepared for the posterior teeth to tip forward and give us a posterior open bite. We were easily able to remain calm and collected when it gave us just that, and to get ourselves out of the problem. We had already discussed the possible need for a Refinement and adjunctive interarch elastics to resolve this issue, so both our team and the patient were prepared for this reality and not remotely let down by it.

Although we could choose to focus on a few small areas of imperfectly positioned teeth (e.g., upper premolars better occluding on the lingual incline of the facial cusps, tooth #5 having more buccal root torque and #12 having more lingual crown torque, and achieving Class I intercuspation on the left side), you would be hard pressed to convince me this outcome was not a monumental success. Yes, it is easy to see that Aoi now benefits greatly from having a dentition that appropriately fits her arch length and is within her facial and gingival soft tissue limits. But far more importantly, this young woman has reclaimed something much more impressive—her confidence. Seeing her freely showcase her smile on her social media, and being able to make eye contact with her at the retainer delivery appointment without having to force her to smile for the photos we took at this same visit, reminded me that what we do in this profession is so far beyond restoring and maintaining physical health and ability; it can completely change patients' mental health and happiness (**Figure 12**). Not all days in dental are easy, and we are all acutely aware of the toll this pandemic has had on each of us. It really does feel nice these days to be able to give a person something to cheer about. ■

Figure 12: no longer shy about showing her smile.

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Ali's Advancement

by Vitaly Gantman, DMD

This case was a Golden Aligner Competition winner at the 2022 Gallerite Reunion in Las Vegas.

Ali presented to my office with his father in August 2019 at the age of 11. We diagnosed him with a severe Class II malocclusion, with insufficient growth of the mandible, retrusive lower lip, and protrusive upper lip with 11 mm of overjet (**Figures 1a-1b**). He had some slight speech difficulties, especially with "s," "v," and "f" sounds.

Dr. Vitaly Gantman earned his dental degree from the University of Montreal in 2012, with an honorable mention awarded by the American Association of Oral and Maxillofacial Implantology. He worked with native communities in Canada's Northwest Territories for 18 months before returning to Montreal to open his first practice with his university buddy Dr. Michael Benarroch. Since then, they have grown to 8 locations throughout greater Montreal.

Dr. Gantman switched from bracket-and-wire orthodontics to Invisalign in 2017, after attending Reingage and acquiring his first iTero. He has been a Diamond Plus provider since 2020, offering comprehensive orthodontics to adults and children. As part of Invisalign's faculty, he teaches Invisalign integration, systems, efficiency, and combination treatments using auxiliaries with clear aligners. He also chairs the AACA's Montreal study club.

Drs. Gantman and Benarroch were co-founders of Dentira in 2018. With more than 10,000 offices across America, Dentira is on a mission to bring transparency to the world of dental supplies and transform how they are purchased.

I directed my concern to the orthodontic issues, but also mentioned that Ali had a weak periodontium on his lower incisors, causing early recession, and that he would require grafting on the gingival aspect of tooth #25 because of its labial position.

One of our doctors proceeded with the grafting. After 6 weeks of healing, Ali returned for his orthodontic exam.

Our treatment plan used the new mandibular advancement (MA) feature of Invisalign, employing integrated wings. This design promotes growth of the lower jaw, the same way a twin block would work. Our plan also focused on alignment and

Figure 1a: before.

torque correction of Ali's flared upper teeth. We instructed him to move his mandible forward and to hold it in front of the wings at all times.

The initial treatment had a pre-MA phase to get the patient used to aligners. We then started incorporating wings for advancement at stage 19, with 4 stages of advancement in increments of 2 mm. This would make it easier for the patient to adapt to the trays.

At stage 40, the 4 permanent cuspids had erupted or were erupting, and we scanned Ali for additional aligners with the same objectives as previously. At this stage we could see a great improvement in growth and molar correction on his left side, almost attaining a full Class I occlusion. In contrast, the right side showed only moderate improvement. We noticed the wings weren't activating; instead, Ali was chewing on them, thus developing a posterior open bite. He underwent 2 more increments of advancement, with the ones on his right being more important than on the left side.

The second set of additional aligners improved Ali's anterior-posterior position to a half-cusp Class II on the right side, but not as much as expected because he kept biting on the wings. This deepened the bite further. We did accomplish some improvement with Curve of Spee leveling.

Ali's cooperation throughout this treatment cannot be overstated. He was phenomenal from the beginning to the end, and his parents were great as well.

On the third Refinement, we decided to switch to elastic Class 2 mechanics, as I thought we had accomplished enough growth that final correction could be obtained with proper elastic wear.

We finished the case with titanium-molybdenum alloy bonded wires (TMA 16) on both upper and lower jaws, 3 to 3 (teeth #6-#11 and #22-#27) (**Figure 2**). We also made an Essix

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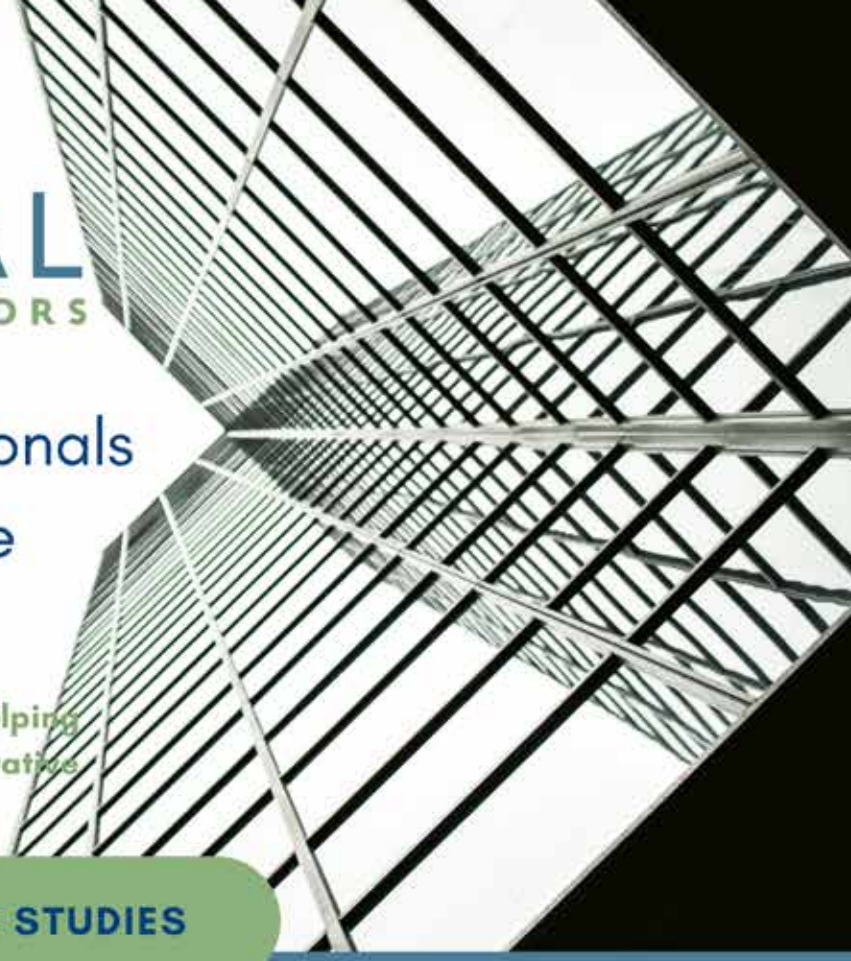

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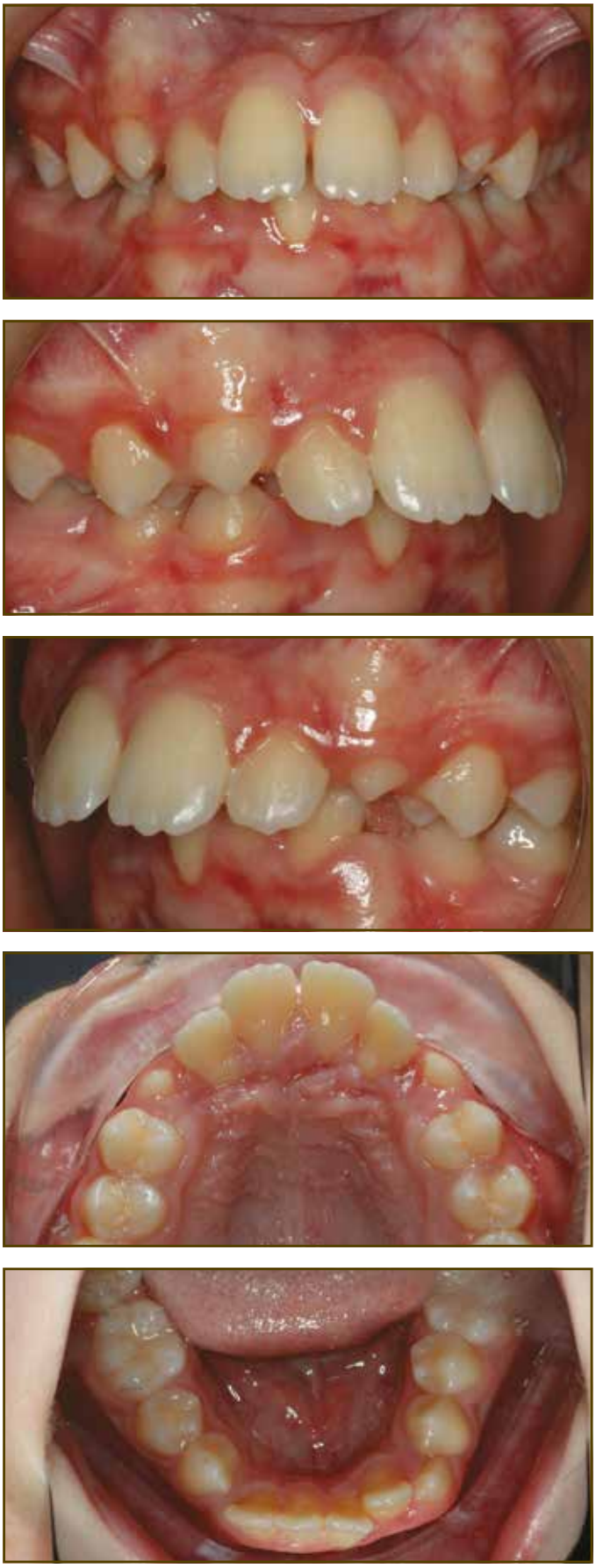

Figure 1b: severe Class II malocclusion, insufficient growth of the mandible, retrusive lower lip, and protrusive upper lip with 11 mm of overjet.

Figure 2: post-op. Posterior occlusion was improved in Class I relationship, with great improvement in the face's profile, and with good growth in the lower third of the face.

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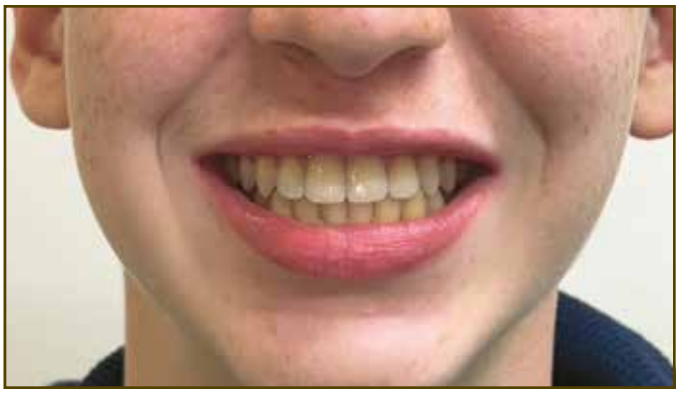

Figure 3: after.

retainer for nightly wear for the first year and to keep as a backup in case the wire breaks or debonds.

Posterior occlusion was improved, and we managed to finish in a great Class I with great improvement in the face's profile and good growth achieved in the lower third of the face (**Figure 3**). Ali was ecstatic with his results and so were his parents, and I cannot thank them enough for trusting me throughout this process. This was a great learning opportunity for me, and the outcome is stellar.

I'm so grateful to have been a part of Ali's journey and hope this new smile we've created will help him achieve his full potential in life, and more. ■

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UCLA School of Dentistry continuing lecturer, AACA member

Asprodental was designed by a dentist for dentists. I was able to cancel many subscription services (appointment reminders, texting, payment plan billing, anywhere access to our schedule, prescription orders, etc) and have all of these features easily accessible in one easy-to-use dental charting system. The software just makes sense and their service is top notch.

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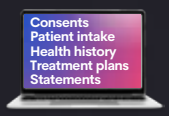

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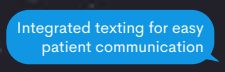

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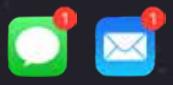

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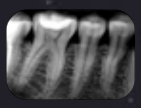

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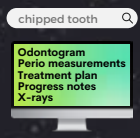

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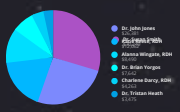

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Practice Management

Overcoming "I'll Think About It" With a Proven Formula for Case Acceptance

by John Meis, DDS, DICOI, FAGD, and Wendy Briggs, RDH

Dr. Meis is an international speaker, best-selling author, and consultant. He advises businesses and practices in the dental industry on topics of strategy, culture, leadership, and execution. Dr. Meis's unique ability is to make the complex simple, the hidden visible, and the difficult easy.

The Team Training Institute helps dental practices become more productive and profitable, with peace of mind in a fun atmosphere. With events and in-office coaching, practices often achieve a significant improvement fast.

His proven executive coaching process helps businesses strengthen their culture, clarify their strategy, and update their business plan.

If you've experienced increased patient hesitancy, delay, and outright rejection of treatment recommendations, you're not alone. According to recent research, less than 30% of dental treatment presented is accepted.[1] Yet we know patients want to be healthy and want to have beautiful smiles. We consistently see "smile" ranked as the top physical trait in first impressions, and fewer than half of adults surveyed (46%) feel confident with their smiles.[2] How do we understand and bridge the gap between what people want and what they do?

When coaching practices on improving their case acceptance, we start by asking how the team works together to present the recommended treatment. To work as a team, the practice must have **clear and consistent standards of care** that allow each member of the team to identify the same potential treatment needs that the doctor will, and that other team members will. This is critical to preventing patients from inadvertently receiving conflicting information from different team members.

Consistency in the standard of care keeps the entire team working together toward the same patient outcome and toward case acceptance. It starts by establishing a clear and consistent treatment philosophy. This enables the team to recognize and accurately predict treatment recommendations. If we were to define what treatment planning standards are, the definition would boil down to having diagnostic and treatment planning outlined clearly, used consistently, and understood by the entire team. What's our preferred method of treatment in this situation compared to that situation? Defining this for the team allows you to set an expectation for care that meets your standards. When the team understands the doctor's diagnostic philosophy and treatment planning standards and knows what expectations are for care in each situation, case acceptance goes up.

To work as a team, the practice must have clear and consistent standards of care.

Set standards

To increase case acceptance for clear aligners, you must have an established standard of care for malocclusion that allows every team member to anticipate when the doctor will recommend aligners. When each team member can identify a potential clear aligner patient, everyone can play his or her role in clearly communicating treatment benefits and creating patient interest prior to the treatment presentation.

Establish cues so that the team members know that when they see misalignment of the mandibular incisors, they should ask the patients a few questions. How do the patients feel about their smile? Are they aware of the potential consequences that can arise when malocclusion is left untreated? How do they feel about their bite and any discomfort they may be having? These

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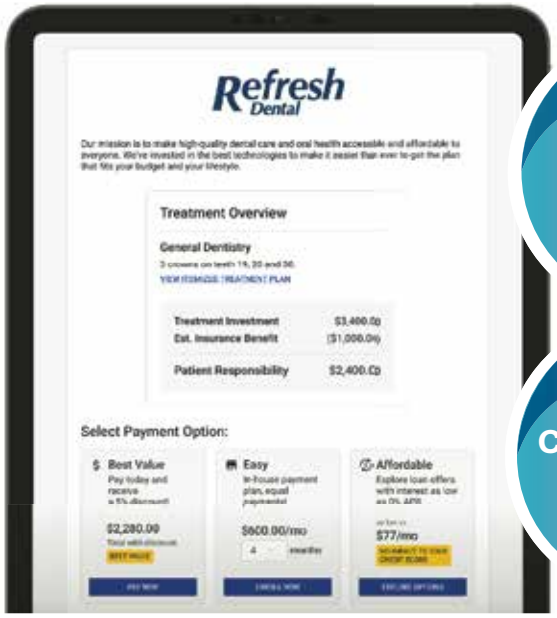

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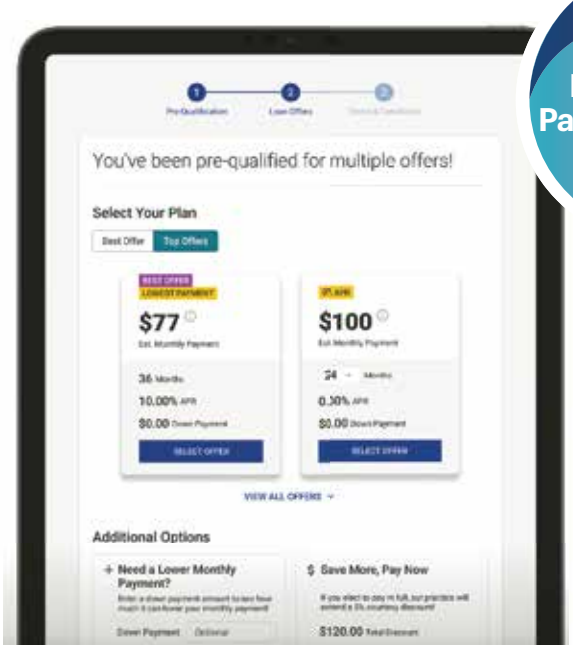

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questions help the team identify patients who may be open to a conversation about aligner therapy.

Speak the same language

After you've established the practice's standard of care for addressing malocclusion and communicated that to the team, the next piece of the case acceptance equation is **tribal language**. Team members tend to use the language they are most comfortable with to describe treatment, and rarely is everyone in the practice using the same terminology. From the hygienist to the dentist to the treatment coordinator, patients may hear the same treatment described 3 different ways, creating significant confusion for the patient. When there's confusion, people don't have confidence in what they're hearing, and they tend not to move forward.

Wendy Briggs is a practicing hygienist, strategic advisor, speaker, trainer, consultant, coach, product developer, and author. She is the president and founder of Hygiene Diamonds as well as the president and co-founder of The Team Training Institute.

Wendy's excellence as a hygienist and patient care advocate has directly influenced more than 3,718 dental practices in 12 countries. She has a proven track record of supporting dentists, hygienists, and their teams (many of which are among the biggest and fastest-growing practices in the United States and Australia) in increasing patient care and doubling hygiene production.

To increase patient confidence, and therefore case acceptance, patients need to hear the same thing from every team member. Determining the terminology you're going to use with patients constitutes establishing your own tribal language. It doesn't have to be scripted word for word, but deciding on patient-friendly language for the most common alignment issues will help you create that consistency in case presentation throughout the practice.

Data gathering

When everyone is aligned on your standard of care and your tribal language, it's time to maximize the impact of your team by setting expectations for **data gathering and patient influence**. When we instill confidence in our team members that they know the doctor's standard of care and know the tribal language the doctor will use, they can confidently tell the patient things like "I'm not the doctor, but my best guess is that straightening your teeth will help to prevent long-term wear and possibly help with your jaw pain." When the team members can start the conversation to inform and influence the patient before the doctor even enters the room, they can be effective advocates for treatment and gather the initial feedback from the patient. Often patients are more comfortable directing treatment questions to the assistant or hygienist rather than the doctor, whose authority they may not want to question.

Utilizing a digital scan can open a doorway to powerful conversations about treatment opportunities.

When the doctor arrives, the team members can empathetically share the feedback and any treatment obstacles they have uncovered with the doctor, demonstrating to the patients that their concerns and questions have been heard. The doctor can now skip straight to reinforcing the team member's identification of treatment needs and addressing any remaining patient concerns, rather than having to start at the beginning with making the case for the treatment need.

Depending on the treatment need, data gathering may go beyond the standard appointment protocol and patient conversation. Part of the empowerment of your team is allowing everyone to take the lead in the use of technology in the practice. All the members should know what their responsibilities are for data gathering and how they're going to incorporate it into their workflow, and they should make a commitment to getting it done. As part of your standard of care, identify how technology should be used to support treatment presentation and acceptance. A doctor we advised reached out recently to let us know, "Finally got our hygienist using the iTero scanner. In the last 6 weeks, we've had 21 patients start with Clear Aligner Treatment."

Set the expectation and create a system that allows the team the flexibility it needs to fit data gathering into the appointment. Utilizing a digital scan is impressive, and can open a doorway to powerful conversations about treatment opportunities. When the team members understand the value of the treatment you're providing to patients, they will be your most powerful advocates for clear aligners and other restorative dentistry.

Don't overwhelm the patient

Using your standard of care, the team members can identify potential treatment needs and use their knowledge and influence to inform and persuade patients. But how do they know where to start when patients have a mouthful of needs? There are many schools of thought on case presentation and treatment planning, but we want to focus on what's working in our current economic environment.

We've seen a shift from offering an overwhelming, time-consuming patient visit, during which we comprehensively treatment-plan based on all oral health needs for the next several years, to a more focused approach. When we thoroughly

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present the details of every treatment need with the associated costs, patients can become overwhelmed, both emotionally and by the financial expense. Instead of moving forward with *something*, they often move forward with *nothing,* leaving their oral health at risk.

Using a more **focused treatment plan**, in which we share all treatment needs with the patient but only make financial arrangements on a narrow area of need, has been shown to help practices increase case acceptance as well as patient retention, especially when the focused treatment plan addresses the patients' chief complaint or health goal. If the patient comes in hoping for a straighter, whiter smile, we start the treatment presentation from the ground up. Use simple language and present financial arrangements for the first stage—straightening the smile with clear aligners. Let patients know that they can progress to the next step in their journey after obtaining ideal functional alignment. In restorative cases, we often start with treatment planning for a single quadrant. This has been extraordinarily powerful and allowed even practices in lower-income neighborhoods to experience tremendous case acceptance.

Set up payment schedules to coordinate with the patients' personal financial calendar, not with a specific visit.

The money question

The last component of the case acceptance formula is offering **firm but flexible financial arrangements**. **Firm** financial arrangements set clear expectations for the practice on when the practice is going to get paid, and clear expectations for the patients on what's expected of them and when. **Flexible** financial arrangements allow you to bridge the gap between those two when needed. This could include making a partial payment before the treatment, making a partial payment during the treatment, using third-party financing, or other customized arrangements.

The goal is to find a way to help the patients accept the care that they need, while not compromising the practice's need to be paid for services rendered. This will likely require having different payment options available to patients. When presenting financial arrangements, start with what your practice would prefer, and then move through your list of options until you find something that will work for the patient.

The most common mistake we see involves practices making their financial arrangements too complicated. Don't present information directly from the practice management software; such information is rarely couched in patient-friendly terminology. Instead, simplify to a one-page financial form that patients can easily understand. Make sure patients know that you're here to help them fit the treatment they need into their budget.

Speaking of fitting the treatment into the patients' budget, it's best to discuss the investment for their treatment plan in terms of monthly payment amounts rather than the total cost. Many patients make decisions based on the monthly number and are more willing to accept care that fits into that monthly budget. There are many third-party finance companies that can help here, and it's even better if you can structure your financial plan with no money down.

Another common mistake is tying payments directly to appointments. This can backfire when patients then cancel the appointment. Many practices we work with ask patients for half of the total payment at time of acceptance, and half when the treatment is provided, but best practice dictates that payment dates be unrelated to service dates. If you have a patient coming back for an aligner adjustment visit, for example, you don't want to require that he or she bring several hundred dollars in payment to that appointment, because that creates a higher chance of a no-show. Set up payment schedules to coordinate with the patients' personal financial calendar, considering their paydays and reoccurring bills, not with a specific visit. Payments tied to visits are typically one of the main factors when a practice schedule falls apart.

When we consider that two-thirds of adults have clinically significant malocclusion[3]—177 million people—and that consumers have a clearly established preference for clear aligners,[4] there's no question that patients need your help. Using this formula for case acceptance will help ensure that you and your practice are successfully doing your part to address the unmet malocclusion need in our country.

If you would like to take a deeper dive with us into our Case Acceptance Process, join us for our upcoming AACA webinar on March 8, 2023 at 9:00 pm ET. You can register for this webinar here: **http://bit.ly/3WpjcYk**. ■

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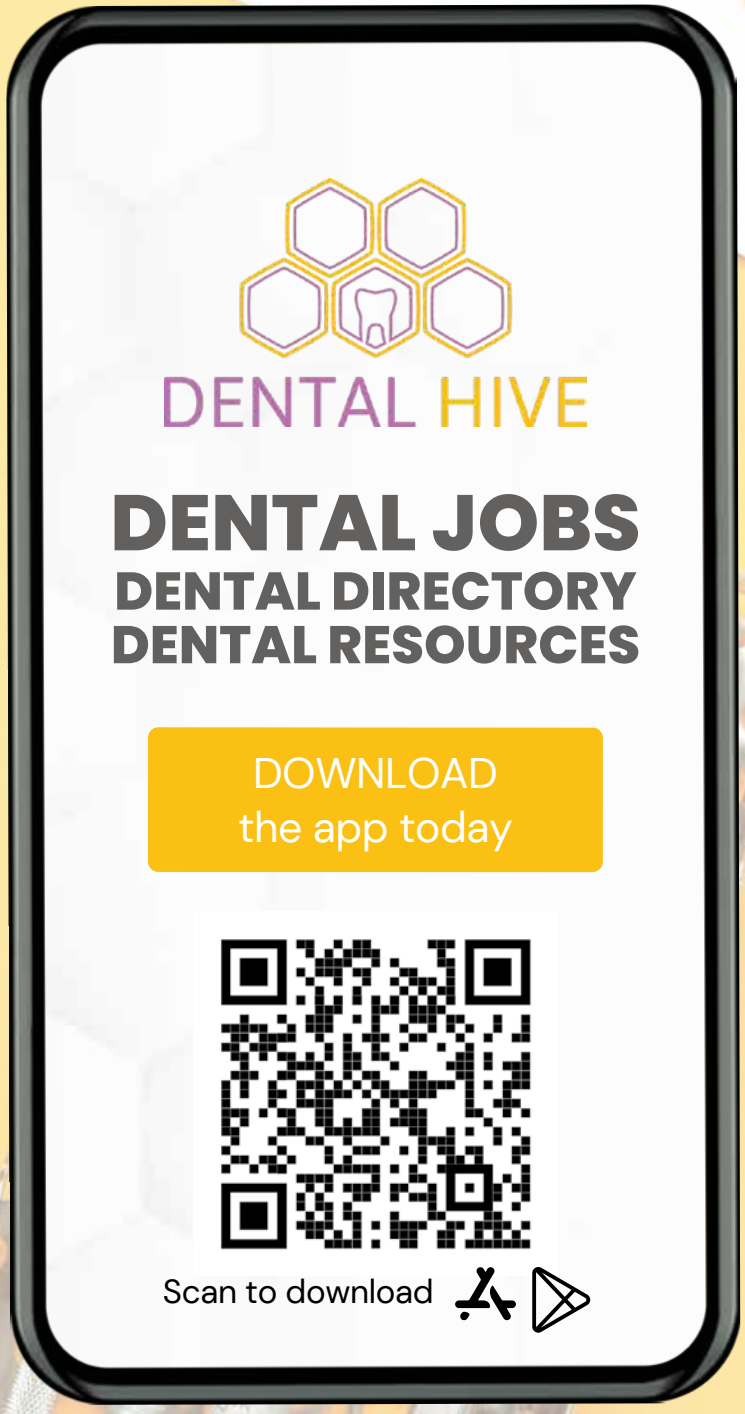

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Case Settling Does Not Result in Optimal Orthodontic Outcomes

by Ben A. Sutter, DMD

Dr. Ben A. Sutter has been studying and treating TMJ dysfunction since graduating Rutgers School of Dental Medicine in 2005. He completed a General Practice Residency at Overlook Hospital in Summit, New Jersey, in 2006. He currently practices general dentistry as a solo private practice owner in Eugene, Oregon.

He has earned Fellowship status in the Academy of General Dentistry, Las Vegas Institute, and the Center for Neural Occlusion. He is a Diplomate of the American Board of Laser Surgery and was awarded Mastership in the International College of Craniomandibular Orthopedics.

Dr Sutter has been actively using T-Scan clinically in his office for a decade. He is the author and co-author of several articles and abstracts on digital occlusion and Disclusion Time Reduction (DTR). He regularly lectures and teaches T-Scan digital occlusal analysis to fellow dentists.

Dr. Sutter lectures on objective digital occlusal measurement and Disclusion Time Reduction along with treating temporomandibular dysfunction. He currently serves as editor in chief for the *Journal of Advanced Dental Technologies and Techniques.*

According to the American Association of Orthodontists, "The goals of orthodontic treatment are optimum dentofacial function, health, stability, and esthetics."[1] There is little doubt that occlusion must be managed to achieve these goals. While there may be some variability in esthetic preferences from patient to patient or doctor to doctor, there is very little "wiggle room" with respect to what is acceptable from an occlusal stability standpoint. Regardless of occlusal philosophy, most

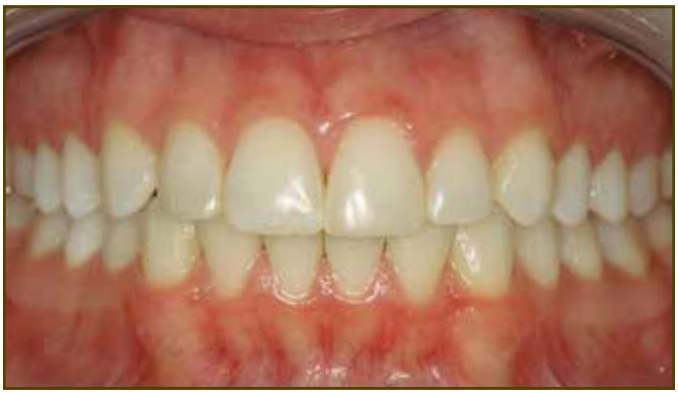

Figure 1: the orthodontic outcome of Clinical Case 1. The midlines are matched, and the maxilla is well developed with nice buccal corridors and straightened teeth. There is 2 mm of vertical overbite, but the posterior occlusal planes are slightly U-shaped, with elevated second molars bilaterally.

of the profession would agree on 3 foundational occlusion pillars that should not be violated:

1. Teeth should come together with bilateral simultaneous contacts.
2. Teeth should have an even distribution of forces across the arch.
3. Excursive interferences are not a good thing.

This article will present 3 clinical cases that challenge currently held concepts in orthodontics, and offer clarity and insight into the common shortfalls of tooth movement treatment outcomes.

Clinical Case 1

Case 1 concerns an 18-year-old female who graduated from a pedodontic office to the author's practice for the establishment of comprehensive care (**Figure 1**). As part of the new-patient examination, we took a screening with the T-Scan™ Novus™ Digital Occlusal Analysis System, utilizing v10 software (Tekscan™ Inc., South Boston, Mass., USA),

to establish an occlusal force profile baseline, much like performing a periodontal probing or obtaining a full-mouth set of radiographs. The patient's history included that at age 16, she had completed a 22-month-long orthodontic treatment course. However, over the intervening 2 years, other than for a few weeks, the patient had not worn her retainers because they were uncomfortable for her to use. Typically, orthodontic guidelines caution against new dentistry being installed for 4 to 6 months after tooth movement, to allow for "orthodontic settling" to occur.

Figure 2 shows the Case 1 T-Scan Novus data, and the reality of this patient's occlusal force profile after 2 years of post–tooth movement "settling." Despite the finished result appearing "visually ideal," the occlusal force profile clearly violates the well-established principles of occlusion, as the central incisors are under extreme loads that are inhibiting most of the posterior teeth (except for #14) from definitively interdigitating. Clearly, "settling" did not achieve an ideal occlusal force distribution per individual tooth.

The question becomes, What are the long-term consequences of leaving this case as is with this significant anterior overload? The patient's mother, an established patient of the author's practice, was present for the T-Scan evaluation, and had a number of pertinent questions after seeing the occlusal data:

- Isn't the orthodontist responsible for the bite when they straightened the teeth? I just spent $7500 to have the orthodontics done.
- How do we fix this?
- Do I need to go back to their office?

Clinical Case 2

Case 2 relates to a 21-year-old female currently undergoing clear aligner orthodontic treatment (**Figure 3**) who reported experiencing headaches, facial tension, clicking and popping of the TMJs, pain in the cheek muscles, neck pain, and shoulder aches, all of which are known TMD symptoms. She also mentioned that in 2 weeks, her aligner treatment would be completed, as she was wearing the last aligner. We shared captured T-Scan 10 data with both the patient and the treating orthodontist, so that further tooth movement corrections could be accomplished (**Figure 4**).

Clinical Case 3

Case 3 involves a 25-year-old female patient who completed orthodontics at age 16 (**Figure 5**). The patient denied experiencing any TMD symptoms, but did not wear retainers and, at present, does not use a nightguard.

Figure 6 documents the MIP closure T-Scan data of Clinical Case 3, revealing many occlusal force profile flaws, despite a visually pleasing tooth movement result.

Discussion

These three cases illustrate the point that visually obtained occlusal observations are not sufficient to answer some basic

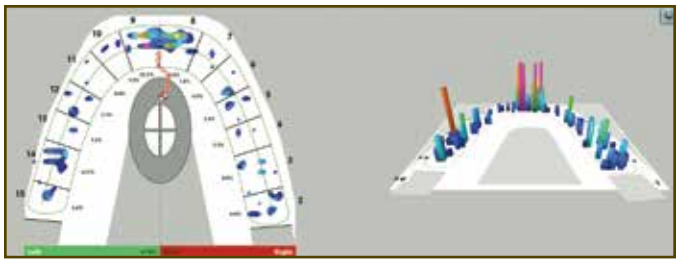

Figure 2: Case 1 T-Scan occlusal force profile. Teeth #8 and #9 bear 26.8% and 22.5% of the total bite force, respectively. And, after #8 and #9 occlude early in the closure and rise to higher forces (pink columns), the posterior teeth engage late, reaching only moderate force levels (light green columns). In all, 49.3% of the total bite force is being absorbed by only the 2 central incisors.

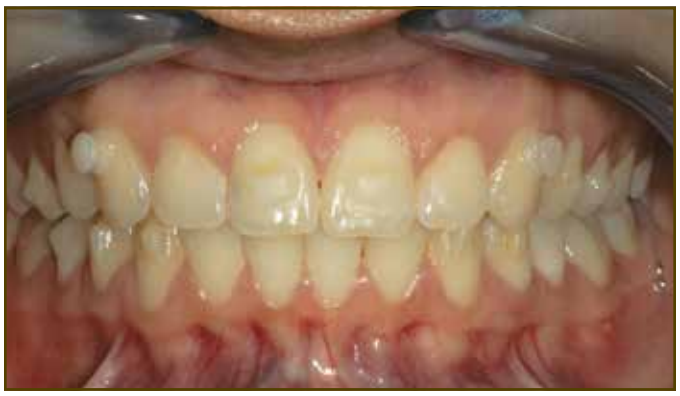

Figure 3: the nearly completed maximum intercuspation (MIP) retracted facial view of Case 2, showing uneven midlines, shallow anterior overbite, and maxillary posterior occlusogingival medial tooth lean, resulting in very poor posterior tooth vertical angulation. Visually, it appears there is bilateral occlusal interdigitation, but the T-Scan 10 data clearly indicates there is a severe occlusal force imbalance present (**Figure 4**).

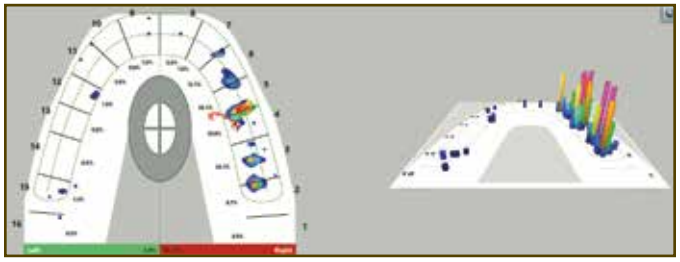

Figure 4: Case 2 T-Scan data captured 2 weeks before aligner therapy is to be completed. The T-Scan metrics reveal the reality of how poorly the teeth actually engage after aligner treatment, while illustrating a severe occlusal force imbalance resulting from the aligners (pink, yellow, and orange columns present on the right arch-half). The scan shows 94.1% of total bite force on the right arch-half, with the remaining 5.9% of force present on the left.

questions regarding orthodontic treatment functional occlusal results.

1. Should dentists assume that a balanced functional occlusion is attained by achieving ideal or improved tooth-to-tooth relationships?[2,3]
2. Is there spontaneous improvement in the overall occlusal force profile from case settling, post retainer cessation?[2,3]
3. Does an improved occlusal force distribution result when a pre-treatment occlusal asymmetry has been corrected orthodontically?[2,3]

Clearly, these 3 presented cases illustrate that when orthodontic outcomes are measured digitally, the visually observed tooth movement results are not satisfactory from a functional standpoint.[2,3] This means that moving teeth into what appears to be ideal alignment and interdigitation does not result in an ideal occlusal force distribution. Nor does settling ensure that the occlusion will self-balance.[2,3] Functional balance can only be accomplished with clinical predictability by using a tool that is capable of measured digital occlusal analysis.[4]

Furthermore, analogue case-finishing methodologies like articulating paper, silicone bite registrations, shim stock "pull and hold," silk ribbon markings, and occlusal wax "holes" are all subjectively interpreted, and are not accurate indicators of the true occlusal force profile or the quality of the occlusal contact timing.[4] Four separate studies have revealed that dentists are very unreliable when choosing the paper marks that represent the greatest occlusal force.[5-8] Importantly, studies show that post-orthodontic patients present with longer disclusion times with higher degrees of friction present between opposing posterior teeth, with larger occlusal force profile imbalances, than subjects that were not treated with orthodontic therapy.[9,10] And despite the Objective Grading System (OGS, introduced by the American Board of Orthodontists) and the Peer Assessment Rating (PAR) index both assessing and defining ideal occlusion by quantifying orthodontic treatment outcomes, unfortunately, neither index offers insight into the functional occlusion relationships that follow orthodontic corrections.[11]

Conclusion

The cases presented here provide an opportunity for the profession to reexamine what is deemed an acceptable occlusal evaluation in all dental care situations, not just following orthodontics. Ask yourself, if these 3 cases were your patients' occlusal force profile outcomes, would you be happy with the results? And what do you believe will be the long-term consequences of leaving some teeth significantly overloaded? Gradually, dentistry is incorporating biometric data to help guide patient care from treatment planning to maintenance,[12] because relying merely on visual inspection is highly subjective and varies widely among clinicians.

Disclosure

The author is not an employee or consultant of Tekscan, nor does he receive any direct compensation from the company. ■

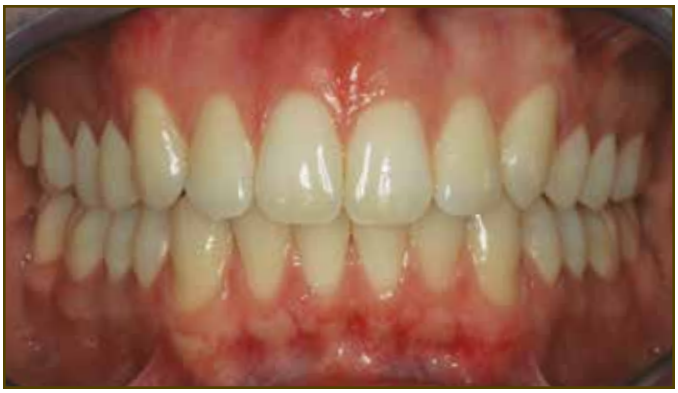

Figure 5: the orthodontic outcome of Clinical Case 3. Visually, the midlines are well matched, and there is 2-3 mm of anterior vertical overbite, but the canine #6 is out of contact with #27. This outcome appears visually well aligned, well interdigitated, and occlusally balanced.

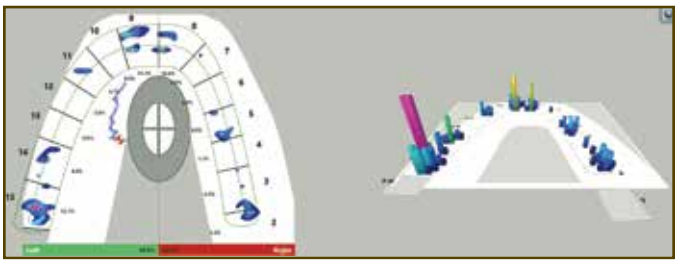

Figure 6: Case 3 T-Scan data shows a very unbalanced occlusal force profile (68% left - 32% right), with 31% of the total bite force shared between occluding teeth #15 and #18 (pink and light blue columns). There is bilateral central incisor overload (yellow columns), and the center of force trajectory (the blue line with a red/white diamond icon) starts left anteriorly and then travels down the left arch-half, indicating that the left teeth forcefully occlude in time (light green and pink columns) well before the right teeth engage with low force (dark blue columns). None of these poor outcome parameters can be detected by simply "visualizing" the finished orthodontic alignment (**Figure 5**).

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Product Review

d.Mistify Pro Data Capture Kit

by David Penn, BDS, MBA

Dr. David Penn is the Head of School of the Postgraduate School of Dentistry.

He graduated from Sydney University Dental School and commenced practice in Sydney's eastern suburbs. In 1983 he established Southern Cross Dental Laboratories, now regarded as one of the leading state-of-the-art dental laboratories.

Dr. Penn lectures and teaches extensively, principally in esthetic orthodontics and facial esthetics. He has taught more than 1000 postgraduate students in the use of sequential aligners and esthetics. Three editions of his book *A Guide to Impressions, Implants and Indirect Procedures* have been used by undergraduates and experienced dentists since 2006.

He also was responsible for the development of dental devices that include the Penn Composite Stent, the Atlas Cabriolet orthodontic retainer, and a series of accelerated orthodontic devices (Munchies) which in 2015 received a prestigious grant from the NSW Department of Innovation.

In 2011, Dr. Penn won the Ernst & Young Entrepreneur of the Year award in the services division.

Dr. Penn established Penn College in 2014 and a specific faculty, the Postgraduate School of Dentistry, in 2015. He has been featured in the NBC Universal TV series *Changing Faces*.

Taking intraoral photos is sometimes challenging because there can be insufficient light and because mirrors get fogged.

The d.Mistify Pro Data Capture Kit is a system that works with a digital camera, such as the one built into a smartphone, to optimize the capturing of intraoral images.

The kit features an air and light dispersal (ALD) unit, which consists of a powerful digital light array, in combination with a twin-speed fan that generates a continuous air stream. The airflow clears saliva and debris from all areas of the mouth. This ensures that when mirrors are attached to the device, the reflective surface remains highly illuminated, crystal clear and free of fog.

The d.Mistify kit also includes a series of 5 mirrors, designed for all mouth sizes and shapes, which can be attached to the ALD unit for image capture.

When used in tandem with the capabilities of the new-generation cameras in the latest smartphones, the d.Mistify kit can be deployed in seconds to make high-definition intraoral images quick and easy to capture, with minimal training for staff.

The d.Mistify kit is useful for taking orthodontic records, for educating patients about procedures or areas of concern, for reinforcement of oral hygiene protocols, and for creation of medico-legal records. The device can also see use in the virtual monitoring of periodontal disease and in all orthodontic and clear aligner cases. ■

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